

when it emerges from this organ it does not measure more than one-third of its ultimate length, although the cells composing it have at this epoch already attained almost the term of their development.

From these researches it may be inferred that—

1. From its very origin the radicle is formed of two distinct tissues, both cellular.

2. That which constitutes the external layer of this organ, and which must be regarded as the first rudiment of a cortical stratum, is susceptible of exfoliation, more or less prompt, according to the plants, and the temperature and humidity of the medium in which they vegetate.

3. This exfoliation, which takes place at the apex of the organ, results sometimes in the complete dislocation of the cells, which in this state continue to grow for a certain time in the midst of a viscid matter before being finally thrown off,—sometimes in the solution of these cells, in the form of epidermoid strips or cups, often confounded with the coleorhiza.

4. The exfoliated cells and the substances accompanying them contain, according to the species from which they are derived, substances which appear, when abandoned to the soil, to constitute what have been called the excretions of roots.

5. The tissue which constitutes the hemispherical extremity of the central portion of the radicle is the seat of the formation and growth of the cells; these formations take place at first by the binary and quaternary multiplication of cells, which terminate the apex of the axis; and of the cells newly formed, the most external are pushed forward to constitute the exfoliable cortical layer, while the more internal become filled with feculent granules, and subdivide again a little below the apex of the axis of the radicle, attaining there, without any other apparent change, the term of their increase.

6. The formation of absorbing appendices (hairs) at the apex of the radicle, when it alone is exposed to the contact of moist air, while confirming the existence of a rudimentary cortical layer in that region, bears fresh witness to the tendency of the organism to seek the medium suited to its nutrition.

XXII.—*On the Reptiles from St. Croix, West Indies, collected by Messrs. A. and E. NEWTON. By Dr. A. GÜNTHER.*

[With a Plate.]

A SMALL collection of reptiles made by Messrs. Alfred and Edward Newton in St. Croix (S^{ta} Cruz), and presented by them to the Collection of the British Museum, offers a contribution
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to our knowledge of the geographical distribution of reptiles throughout the West India Islands, and contains two new species.

Messrs. Newton have kindly communicated to me their valuable notes, which constitute the portions included within inverted commas (" ").

We find a list of animals from St. Croix in Hans West's "Beyträge zur Beschreibung von St. Croix. Aus dem Dänischen." Copenh. 1794-8. The author mentions the following reptiles (p. 243):—

Testudo mydas, v. Green Turtle.

Testudo caretta, v. Caret or Lugger-head Turtle.

Testudo græca, v. Land Turtle. Rare.

Lacerta principalis (L.), v. Lizard. By this name, now applied to a North American species of *Anolis*, West designates the species which will be described hereafter.

Lacerta iguana, v. Guana.

Lacerta sputator, v. Slippery-back. This name is applied by West to *Mabouia ænea*.

Lacerta rapicauda, v. Wood-slave.

Lacerta. Ground Lizard.

No snake is mentioned by West. The following species are in the collection of Messrs. Newton:—

1. *Dromicus antillensis*, D. & B. (*Psammophis antillensis*, Schleg.).

There are four specimens of this species in the Collection, all showing exactly the same characters, although differing from a specimen from St. Thomas. They, like the latter, have eight upper labial shields, the third, fourth, and fifth of which come into the orbit. One temporal is in contact with the postocular, two others are behind the anterior temporal, and two or three more scale-like shields cover the posterior portion of the temporal region. Each scale is provided with two small pore-like impressions near the tip; they are of a lighter colour than the remainder of the scale. The coloration and the number of scales, however, is different: whilst the snake from St. Thomas has the body and tail light reddish-brown above, with more or less conspicuous darker stripes, the inferior parts dull yellowish, marbled with brown, and the scales in nineteen rows, the specimens from St. Croix have the upper parts saturated blackish brown, with equidistant reticulated yellowish transverse lines, the lower parts either of a pure yellow or with scattered irregular brown spots, and the scales in seventeen rows. There is a black streak through the eye, and a longitudinal groove between the labial and temporal shields, as in several species of *Dromicus*. Male and female are alike.

This snake appears to have been known to André-Pierre Ledru, who published a "Voyage aux Iles de Ténériffe, la Trinité, St. Thomas, Ste. Croix, et Porto-Ricco," Paris, 1810, 8vo, in two volumes. In a list of reptiles, which is less valuable for our purpose than that of West, because it contains *promiscuè* all the reptiles observed in the different islands, Ledru mentions "le cobel" (ii. p. 213). He says, "Le fond de sa couleur est tantôt gris, tantôt brun, mais communément d'un noir assez foncé, avec une multitude de petites lignes blanches transversales." The latter character is far more applicable to the variety from St. Croix than to *Dromicus ater*, which may also be intended. Ledru observed his snake at the river Toa (Porto-Rico), and thinks it identical with *Coluber colubella*, Gm. (*Col. cobella*, L.).

"We regret that we have little information to give respecting this snake. It certainly is not very numerous in the island; for we never saw a living specimen, though we usually went about with our eyes well open. It would seem generally to frequent the waste in preference to the cultivated districts, or at least where there are most shrubs and bushes; but we have heard of one or more being found in a hole in the brickwork beneath the bed of a steam-engine-boiler. One of the specimens was captured in the town of Frederiksted."

The species and varieties of *Dromicus*, and their geographical distribution, are far from being known. There are several snakes in the Collection of the British Museum, which show considerable differences from the species to which they are referred for the present; of these, however, I have not the advantage of knowing the habitat, and each of them is represented by a single specimen only. I direct the attention of herpetologists especially to one of them, the anterior portion of the body of which is marked as in *D. rufodorsatus*, the posterior and the tail being black. The rostral shield is flat and obliquely ascending forwards; one anterior, two middle, and three posterior temporal shields; nineteen series of scales. Length 52 inches.

2. *Thecadactylus rapicauda*, Houtt.

"The *Thecadactylus* is not very common in St. Croix, chiefly frequenting old trees in the uncultivated portions of the island, though sometimes found in wood-cellars near houses. The statement of Dr. West, that it is regarded by the negroes with the greatest aversion, is perfectly true: they believe that, in case of one placing its foot upon them, it can only be got rid of by cutting off the piece of flesh upon which it has fastened. It is certainly difficult to kill, as one will bear the infliction of several sharp blows without much apparent harm being done to it. In St. Croix it is everywhere known as the 'Wood-Slave,'—an

appellation which, according to Mr. Gosse, is, in the leeward part of Jamaica, now applied to a species of *Mabouia* (Nat. Soj. p. 75); though it would appear, from what he elsewhere says, that by Sloane and others this term was used for some of the *Geccotidæ* (Proc. Z. S. L. 1848, p. 60; Ann. and Mag. N. H. 1850, p. 344)."

3. *Mabouia ænea*, Gray (*Eumeces marbouia*, D. & B., *Lacerta sputator*, West, not L.).

"The *Mabouia* is known in St. Croix as the 'Slippery-back;' and some of the dread which is inspired by the last-mentioned is also experienced of this species by the negroes. It is supposed to fasten upon the hand or other exposed part of the body with its mouth; and they assert that there is no way of making the creature let go its hold, save cutting it up, if it once seizes upon one. It is more plentiful than the *Thecadactylus*, but still not often observed. Two of the examples sent to the Museum were caught *in copulâ*."

4. *Anolis Newtoni*, n. sp. (Pl. IV. fig. A.)

?*Lacerta principalis*, West, not L.

Snout moderately elongate and depressed, with the canthus rostralis sharply prominent, and with a pair of ridges arising from the superciliary margins; a slight groove between these two ridges, another between each ridge and the canthus rostralis; loreal region rather concave, with five series of very small shields; the space between the orbits is covered with two series of shields only; occipital shield distinct. Scales on the sides of the body granular, gradually becoming larger towards the dorsal line and the belly, where they are distinctly keeled. No prominent dorsal crest, but two or three series of larger scales along the vertebral line. Pouch of the throat present, moderately developed. Tail slightly compressed, verticillated, above with a low serrated ridge, beneath with strongly keeled scales of equal size. Greenish olive (in spirits), irregularly spotted with blackish brown on the sides and on the posterior parts of the hinder extremity. Female sometimes with a broad whitish dorsal streak, crossed by narrow black bars.

Description.—The snout is moderately depressed and slightly elongate, the distance between the two anterior angles of the orbit being three-quarters of the distance between the orbit and the extremity of the snout; anteriorly it is rather narrow and rounded. The canthus rostralis is sharp and rather prominent; and there is another pair of low divergent ridges, arising from the superciliary margin of the bony orbit, and extending to the

middle of the length of the snout; between these ridges is a shallow groove, and another, narrower, between each ridge and the canthus rostralis. There is a series of larger shields along the superciliary margin and the ridge; no other smaller shields occur between the superciliary series, but many in and before the central groove of the upper surface of the snout. The canthus rostralis is formed by a series of elongate shields, angularly bent; two shields between the latter series and that of the interior ridge. The nostril opens laterally, between several small shields, above the anterior extremity of the canthus rostralis. The canthus rostralis is continued along the outer margin of the roof of the orbit, which is provided with a group of five or six polygonal shields, surrounded by minute granulations. There is an ovoid occipital shield in immediate contact with the suture between the superciliary series, and surrounded by a great many smaller shields. The loreal region is slightly concave, with five longitudinal series of small oblong shields. The rostral shield has posteriorly five notches (to receive five small shields), of which the middle one is the deepest; seven very narrow labials, with two or three minute ones behind, form the lateral margin of the upper jaw. The anterior extremity of the lower jaw is covered with a pair of rather broad labials, its margin with seven narrow shields; three other series of smaller shields run parallel to that of the labials. The chin and all the throat are covered with very small granular scales.

The tympanum is a rather small cleft, without any particular scales round its margin; the scales on the temple are exceedingly small.

Immediately behind the occipital shield commences the streak of larger vertebral scales; they are arranged in two or three series, and keeled like the other scales on the back. They gradually become smaller towards the sides, in the middle of which they form minute granulations. Those of the belly are distinctly keeled, and larger than those of the back; they are largest on the sides of the pouch, where they are arranged in very oblique series. The pouch is present in both sexes, but it forms a slight fold only in the female. The scales round the vent do not show any peculiarity, and are granular.

The vertebral streak of scales is continued on the tail into a low serrated crest, formed by a single series of scales. The tail is slightly compressed and rounded beneath, verticillated; the single verticils are distant from each other for four scales of the caudal crest, the fourth scale always being larger than the three preceding ones. The sides of the tail are covered with granular scales, whilst the scales of its lower surface are very large and strongly keeled; the root of the tail is slightly swollen

and provided with small scales in its whole circumference, except on the dorsal crest.

The fore leg reaches, if laid backwards, to the loin; it is covered with keeled scales on the superior and anterior sides, with granulations on the inferior and posterior. The inner finger is not dilated, the fourth and fifth are of equal size. The hind leg reaches, if laid forwards, to the anterior margin of the orbit; it is covered anteriorly with keeled scales, all the rest being granular.

The ground-colour is now greenish-olive, in life apparently greenish, shining golden and bluish; most of the specimens have the sides of the neck and of the trunk and the posterior part of the limb irregularly dotted with blackish-brown. One of the females (caught with the male during the act of copulation) has a broad dorsal streak, crossed by narrow black bars. The lower parts are uniform yellowish-white.

The females are only half the size of the males. All the females had one egg only in the oviduct, those of the ovarium showing no sign of development: it is very large compared with the size of the animal; and there was no trace of embryo in it, although it appeared to be ready for laying. This observation seems to be in contradiction to the abundance of these Tree-lizards; but it may be possible that they breed several times in every season, and that a single egg only is impregnated by one act of copulation.

	Male.		Female.	
	inches.	lines.	inches.	lines.
Distance between tympanum and the extremity } of the snout	0	8½	0	6
Distance between tympanum and vent	1	6½	1	3½
Length of the tail	4	6	3	6
Distance between the bony orbital margins	0	1	0	0½
„ the anterior angles of the orbit ..	0	3	0	2
„ the orbit and the extremity of } the snout	0	4	0	3½
Length of the humerus	0	5	0	3½
„ fore-arm	0	4¼	0	3¼
„ second and fifth fingers	0	2½	0	2
„ third and fourth fingers	0	4	0	3
„ fore leg	0	6½	0	5
„ hind leg	0	6½	0	5
„ fourth toe	0	7½	0	6
„ fifth toe	0	3½	0	2¾

“The *Anolis* is exceedingly abundant, and its great familiarity affords excellent opportunities of studying its manners; but Mr. Gosse has already described the habits of the two Jamaica species, *A. iodurus* and *A. opalinus*, so fully (Nat. Soj. pp. 216 *et seq.*), that we have little more to say of those of the present than that they seem entirely to resemble the former: at any

rate, the differences are probably only such as would be appreciated by one who has had the opportunity of observing all three. But we must bear witness to the extreme fidelity of Mr. Gosse's notes—not a word of them but seems to be literally and entirely true; and especially must we remark on his account of the 'goître' in the species of this genus, the mechanical method of displaying it practised by the animal, and its unvarying colour, all of which is as accurate as the use of that remarkable appendage is to us at present unknown. The brilliancy, however, of this orange disk varies in different individuals. To describe generally the hues of the rest of the body would be impossible,—they are simply those of the rainbow, though never of any great intensity, excepting when, in an irritated or alarmed animal, the prevailing tint, whatever it may have been before, becomes a dull smoky brown. This species is much fed upon by birds: a young Bare-legged Owl (*Gymnoglaux nudipes*) which one of us possessed would scarcely eat anything else; and when offered to it alive, these lizards would make a resistance which often ended in their escape ('Ibis,' 1859, p. 65): we have found their remains also in the stomachs of other birds, especially in the Green Heron (*Butorides virescens*), which seems constantly to prey upon them. The food of the species seems to consist chiefly of ants. There is one peculiarity about it which Mr. Gosse has not recorded,—and that is, that if a small pebble, the size of a pea or so, be thrown near where an *Anolis* is sitting, it will run after it, probably under the idea that it is a living creature. Among the specimens of this species sent to the Museum were a pair taken *in copuld.*"

5. *Sphærodactylus macrolepis*, n. sp. (Pl. IV. fig. B.)

Body surrounded by about forty longitudinal series of scales of rather large size; no vertebral streak of smaller ones, those of the back keeled, of the belly smooth. Trunk and tail uniform blackish-brown, in younger individuals some scales with blackish tips; head greyish-brown, marbled with black; jaws and throat striolated with blackish.

Description.—The snout is of moderate extent, and slightly pointed; all the upper surface of the head and the sides are covered with scales of moderate size; there is an exceedingly small horn-like spine above the middle of the orbit. The rostral shield is low, and bent backwards on the upper surface of the snout; the sides of the jaw are margined with three elongate labials; the nostril is situated above the posterior extremity of the rostral shield and the first labial, and exceedingly small. The anterior lower labial is single; a series of three other shields covers the lateral margin of the lower jaw. The scales of the

a species of *Iguana*. An example seen by one of us was about 4 feet long, with a large dewlap and high dorsal crest extending down the back. It appears now to be restricted only to the eastern end of the island."

Mr. Rüse, of St. Thomas, has sent, during the printing of this paper, two bottles containing frogs from that island. One is marked *Hylodes martinicensis*, the other, *Cystignathus ocellatus*. After a careful examination and comparison with the other species of *Hylodes* and *Cystignathus*, I have convinced myself that both belong to one and the same species, and that those named *C. ocellatus* are merely the young of the other. The toes are not at all dilated; and the frogs belong to a new species of *Cystignathus*, which I call

Cystignathus albilabris.

Tympanum distinct, one-half the size of the eye. Vomerine teeth in two short series, behind the level of the interior nostrils. Tongue very slightly nicked posteriorly. Skin smooth, with an indistinct longitudinal fold on each side; a transverse fold between the fore-legs, another across the posterior third of the belly. Snout moderately produced. Tarsus with a longitudinal fold; interarticular tubercles prominent. Male with two vocal sacs, communicating with each other, each with a separate slit. A white or whitish streak round the snout to the axil.

Colour of the adult:—Above uniform dark bluish-black; the upper leg with some black cross-bars superiorly, and some whitish spots posteriorly. The lower parts white, the throat speckled with brown. The labial streak whitish, indistinct below the eye.

Colour of the young:—Brownish-olive marbled with darker; uniform white inferiorly; the labial streak white, very distinct.

These descriptions of the colours are taken from quite fresh specimens in spirits.

Hab. St. Thomas. The specimens are now in the British Museum.

XXIII.—*Characters of some apparently undescribed Ceylon Insects.* By F. WALKER.

[Continued from vol. iii. p. 265.]

Fam. Curculionidæ.

DESMIDOPHORUS DISCRIMINANS. Ferrugineus, crassus, rostro robusto nigro nitente striato coxas anticas attingente, thorace tuberculato, elytris rude lineato-tuberculatis, vix dimidio apicali testaceo-albido, femoribus albido fasciatis. Long. 5 lin.